

Claims

1-24 (Canceled).

25. (New) A discoloration removal cleaning agent for at least one of a titanium building material and a titanium alloy building material, comprising:

- a water-soluble inorganic acid salt;
- a composition including one of an organic acid and an organic acid salt;
- a surfactant;
- a hydrophilic oxygen-containing hydrocarbon solvent; and
- water,

wherein the cleaning agent satisfies at least one of the following conditions:

- (a) the cleaning agent comprises one or more types of a thickener, and
- (b) a viscosity of the cleaning agent that is measured at a room temperature is between about 100 mPa•s and 10,000 mPa•s.

26. (New) The discoloration removal cleaning agent according to claim 25, wherein:

- (c) the cleaning agent comprises one or more types of a fluoracarbon resin and one or more types of a polishing material, and
- (d) the cleaning agent comprises one or more types of a discoloration inhibitor.

27. (New) The discoloration removal cleaning agent according to claim 26, wherein the inorganic acid salt includes an inorganic fluorine compound salts whose content is about 0.5-5.0 wt%.

28. (New) The discoloration removal cleaning agent according to claim 25, wherein the composition includes at least one of an formic acid, an oxalic acid, a citric acid, a malic acid, a lactic acid, a tartaric acid, a succinic acid, a fumaric acid, a gluconic acid, a hydroxybutyric acid, an ethylenediaminetetraacetic acid, a hydroxyethylenediaminetetraacetic acid, a diethylenetriaminopentaacetic acid, a hydroxyethanediphosphonic acid, and a particular salt.

29. (New) The discoloration removal cleaning agent according to claim 28, wherein the particular salt includes at least one of a sodium salt, a potassium salt and an ammonium salt.

30. (New) The discoloration removal cleaning agent according to claim 25, wherein a content of the composition is about 2-15 wt%.

31. (New) The discoloration removal cleaning agent according to claim 25, wherein a surfactant has a hydrophilic-lipophilic balance value of at least 12.

32. (New) The discoloration removal cleaning according to claim 25, wherein the composition is at least one of anionic surfactants and nonionic surfactants.

33. (New) The discoloration removal cleaning according to claim 32, wherein anionic surfactants include at least one of polyoxyethylenealkyl ether acetic acids, sodium salts thereof,

polyoxyethylenealkyl ether phosphoric acids and sodium salts thereof, dialkylsulfosuccinic acids and sodium salts thereof.

34. (New) The discoloration removal cleaning according to claim 32, wherein nonionic surfactants include polyoxyethylenealkyl ethers, polyoxyethylenealkylallyl ethers and polyoxyethylenepolyoxypropylenealkyl ethers.

35. (New) The discoloration removal cleaning agent according to claim 25, wherein a content of the surfactant is about 2-10 wt%.

36. (New) The discoloration removal cleaning agent according to claim 25, wherein the hydrophilic oxygen-containing hydrocarbon is at least one of ethylene glycol, polyethylene glycol, propylene glycol, lower molecular weight polypropylene glycol, hexylene glycol, 1,3-butanediol, glycerin, methyldiglycol, methyltriglycol, ethyldiglycol, ethyltriglycol, butyldiglycol, butyltriglycol and N-methylpyrrolidone.

37. (New) The discoloration removal cleaning agent according to claim 25, wherein a content of the hydrophilic oxygen-containing hydrocarbon is about 5-20 wt%.

38. (New) The discoloration removal cleaning agent according to claim 25, wherein the thickener is at least one of polyvinyl alcohol, methyl cellulose, hydroxyethyl cellulose, guar gum, xanthan gum, carboxyvinyl polymer, polyethylene oxide and polyvinylpyrrolidone.

39. (New) The discoloration removal cleaning agent according to claim 25, wherein a content of the thickener is about 0.2-1.5 wt%.

40. (New) The discoloration removal cleaning agent according to claim 25, wherein the discoloration inhibitor is at least one of mercaptobenzothiazole-based inhibitors, triazole-based inhibitors, imidazole-based inhibitors and thiourea-based discoloration inhibitors.

41. (New) The discoloration removal cleaning agent according to claim 40, wherein a content of the discoloration inhibitor is about 0.1-1.5 wt%.

42. (New) The discoloration removal cleaning agent according to claim 25, wherein the fluoracarbon resin is at least one of polytetrafluoroethylene, polytetrafluoroethylene-hexafluoropropylene copolymer and polyvinylidene fluoride.

43. (New) The discoloration removal cleaning agent according to claim 42, wherein a content of the fluoracarbon resin is about 0.3-2.0 wt%.

44. (New) The discoloration removal cleaning agent according to claim 25, wherein the polishing material is at least one of diamond, emery, garnet, corundum, ruby, silica sand, silicon carbide, alundum, cerium oxide, zirconium oxide, α -alumina and chromium oxide.

45. (New) The discoloration removal cleaning agent according to claim 44, wherein a content of the polishing material is about 10-30 wt%.

46. (New) A discoloration removal cleaning method for a particular material which is at least one of a titanium building material and a titanium alloy building material, comprising the steps of:

- a) coating discolored sections of the particular material with a discoloration removal cleaning agent, the cleaning agent including a water-soluble inorganic acid salt, a composition including one of an organic acid and an organic acid salt, a surfactant, a hydrophilic oxygen-containing hydrocarbon solvent and water;
- b) allowing the coated sections to stand for a predetermined time period; and
- c) removing the cleaning agent by water washing the coated sections.

47. (New) The discoloration removal cleaning method according to claim 46, wherein, after step (b), step (c) is performed by at least one of high-pressure water washing at approximately 30-100 kg/cm² and approximately 10-50 L/min, and low-pressure spray water washing that is at most approximately 10 kg/cm² and approximately 5-30 L/min.

48. (New) The discoloration removal cleaning method according to claim 47, further comprising the step of:

- d) after steps (a) and (b) and before step (c), polishing the coated section, if necessary.

49. (New) The discoloration removal cleaning method according to claim 48, wherein step (c) is performed by water washing after step (d).

50. (New) The discoloration removal cleaning method according to claim 46, wherein a coating coverage of the discoloration removal cleaning agent performed in step (a) is about 50-200 g/m².